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10/535,559

01/04/2006

Paul Sabin

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EXAMINER

PARSONS, THOMAS H

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

05/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/535,559 | Applicant(s) SABIN ET AL. | |
| | Examiner THOMAS H. PARSONS | Art Unit 1795 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/04/2006, 07/06/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

page 18, line 29, the text, "...a repeat unit have a between 1 and ..." appears awkwardly worded.

page 22, line 26, the text, "...between the to the gasket portion..." appears awkwardly worded.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Osenar et al. (US 7,306,862)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C.

102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

Art Unit: 1795

inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Claim 1: Osenar et al. disclose an electrochemical cassette comprising at least one electrochemical cell which comprises:

a composite membrane electrode assembly (MEA) having a molded gasket bonded to the periphery of the MEA, wherein the gasket comprises at least one reactant manifold opening extending through the thickness thereof and at least one sealant channel or port;

a fuel flow field, an oxidant flow field, and a separator plate, each component having at least one reactant manifold opening extending through the thickness thereof;

wherein the one or more composite MEA, the oxidant flow field, the fuel flow field, and the separator plate are assembled and encapsulated about the periphery thereof by a sealant; and

wherein the sealant contemporaneously seals the respective channels to selectively block those reactant manifold openings which are not intended to deliver material to a particular flow field (col. 5: 31-59 and col. 6: 1-6 and 22-32). See also entire document, in particular, Figures 1-3 and 5, and col. 4: 18-col. Col. 12: 67.

Claim 2: Osenar et al. further disclose that the cassette comprises at least one coolant flow field and wherein each membrane electrode assembly and each plate further comprise at least one coolant manifold opening wherein each coolant manifold opening extends through the thickness of the cassette (col. 7: 1-16).

Claim 3: Osenar et al. further disclose a separator plate and one or two flow fields that are integrated into a bipolar plate (col. 7: 17-42).

Claim 4: Osenar et al. further disclose that each bipolar plate has zero or one oxidant flow field and has zero or one fuel flow field (col. 7: 17-42).

Claim 5: Osenar et al. further disclose that each membrane electrode assembly is in contact with a fuel flow field and an oxidant flow field (col. 6: 22-32).

Claim 6: Osenar et al. further disclose that the electrochemical cassette is a fuel cell cassette (col. 4: 25-30).

Claim 7: Osenar et al. further disclose that each composite MEA comprises:
a MEA comprising an ion conductive layer interposed between two gas diffusion layers which comprise a catalyst (col. 6: 11-17), and
a molded gasket bonded to the periphery of the MEA (col. 8: 56-60).

Claim 8: Osenar et al. further disclose that the composite MEA comprises a molded gasket which interpenetrates a portion of the gas diffusion layers of the MEA. In particular, because the structure and method of sealing the MEA are the same as that instantly disclosed, the molded gasket inherently interpenetrates a portion of the gas diffusion layers of the MEA.

Claim 9: Osenar et al. further disclose that a separator plate and one or two flow fields are integrated into a bipolar plate and each flow field comprises a series of ridges or protrusions (i.e. lands) in the surface of the bipolar plate (col. 1: 58-col. 2: 6).

Claim 10: Osenar et al. further disclose that at least one bipolar plate comprises a coolant flow field (col. 7: 1-29).

Claim 11: Osenar et al. further discloses that a first bipolar plate comprises a first coolant flow field and a second bipolar plate which are aligned to form a coolant passage. In particular,

because the fuel cassette of Osenar et al. is structurally the same as that instantly disclosed, it inherently would provide the claimed coolant passage.

Claim 12: Osenar et al. in Figure 2 further disclose that at least one surface of at least one separator plate has one or more sealant channels.

Claim 13: Osenar et al. further disclose that at least a portion of the bipolar plate sealant channels is adjacent to the gasket of the membrane electrode assembly. In particular, because the fuel cassette of Osenar et al. and the manner in which it is sealed is the same as that instantly disclosed, it inherently would provide the claimed structural relationship between the sealant and gasket.

Claim 14: Osenar et al. further disclose that the sealant channel is adjacent to the interface of the gasket and the membrane electrode assembly. In particular, because the fuel cassette of Osenar et al. and the manner in which it is sealed is the same as that instantly disclosed, it inherently would provide the claimed structural relationship between the sealant and gasket.

Claim 15: Osenar et al. further disclose that at least one sealant channel is interposed between each membrane electrode assembly and each plate or between adjacent plates. In particular, because the fuel cassette of Osenar et al is structurally the same as that instantly disclosed, it inherently would provide the claimed sealant channel.

Claim 16: Osenar et al. further disclose that the molded gasket is composed thermoset or thermoplastic material (col. 11: 15-25).

Claim 17: Osenar et al. further disclose that the sealant is a thermoset or a thermoplastic material (col. 11: 15-25).

Claim 18: Osenar et al. further disclose that the thermoplastic material is selected from the group consisting of thermoplastic olefin elastomers, thermoplastic polyurethane, plastomer, polypropylene, polyethylene, polytetrafluoroethylene, fluorinated polypropylene and polystyrene (col. 11: 15-25).

Claim 19: Osenar et al further disclose that the thermoset material is selected from the group consisting of epoxy resins, urethanes, silicones, fluorosilicones, and vinyl esters (col. 11: 15-25).

Claim 20: Because the thermoset material of Osenar et al. is the same as that instantly disclosed, it inherently would have a viscosity of between about 10,000 and 150,000 cP.

Claim 21: Because the thermoset material of Osenar et al. is the same as that instantly disclosed, it inherently would have a viscosity of between about 10,000 and 55,000 cP.

Claim 22: The limitation “wherein the bipolar plate is machined or molded out of at least one of a carbon/polymer composite, graphite or metal” has been considered, and construed as a process limitation that adds no additional structure to the bipolar plate. Osenar et al. on col. 2: 1-6 disclose that bipolar plates serve as current collectors. One skilled in the art would know that bipolar plates would inherently have to be metallic so to be able to function as a current collector.

Claim 23: The limitation “wherein the bipolar plate is stamped from a metal sheet” has been considered, and construed as a process limitation that adds no additional structure to the bipolar plate. Osenar et al. on col. 2: 1-6 disclose that bipolar plates serve as current collectors. One skilled in the art would know that bipolar plates would inherently have to be metallic so to be able to function as a current collector.

Claim 24: Osenar et al. further disclose that at least a portion of the sealant channels open to the peripheral edge of one or more plates of the cassette (col. 5: 31-38).

Claim 25: Osenar et al. in Figures 2-3 and 5 further disclose that the each membrane electrode assembly and plate further comprises at least one sealant hole extending through the thickness thereof, and wherein the sealant holes are in contact with at least a portion of one or more sealant channels.

Claim 26: Osenar et al. further disclose that at least a portion of the sealant channels are open to the peripheral edge of one or more composite MEAs or plates of the cassette (col. 5: 52-54).

Claim 27: The limitation "wherein the sealant is introduced into the fuel cell cassette through one or more of the sealant holes or through the sealant channel openings about the periphery of the plates" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 28: The recitation "wherein the sealant is introduced by pressure assisted resin transfer or by vacuum assisted resin transfer" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 29: The recitation " wherein the sealant or resin is introduced under a pressure differential of between about +15 psi and about -15 psi" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 30: The recitation "wherein the sealant is introduced by pressure assisted resin transfer under a positive pressure of between 0 psi and about 50 psi" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 31: The recitation “wherein the sealant or resin is introduced by vacuum assisted resin transfer under a partial pressure of between about 750 Torr and about 1 mTorr” has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 32: Osenar et al. disclose a fuel cell stack comprising:

- (a) at least one electrochemical cassette according to any one of claims 1 through 31;
- (b) at least one end plate having one or more openings which align with the reactant manifold opening(s);

wherein the end plate is assembled on the top and/or bottom of the stack of one or more electrochemical cassettes such that the openings in the end plate align with the fuel manifold openings, the oxidant openings, and optionally the coolant manifold openings (col. 5: 31-59 and col. 6: 1-6 and 22-32. and col. 11: 59-col. 12: 32).

Claim 33: The recitation “wherein the end plate is assembled with the electrochemical cassette(s) prior to encapsulation and prior to introduction of the sealant such that the end plate and fuel cell cassettes(s) are encapsulated and sealed in combination” has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

However, on col. 7: 65-col. 8: 11, Osenar et al. disclose that the end plate is assembled with the electrochemical cassette(s) prior to encapsulation and prior to introduction of the sealant such that the end plate and fuel cell cassettes(s) are encapsulated and sealed in combination.

Claim 34: Osenar et al. further disclose that a compression means is applied to the stack to provide additional compressive force to the fuel cell stack (col. 8: 3-9).

Claim 35: Osenar et al. further disclose that the end plate is attached to one or more electrochemical cassettes after encapsulation of the electrochemical cassette(s) col. 11: 59-col. 12: 32.

Claim 36: Osenar et al. further disclose that the end plate is attached by a compressive seal col. 7: 65-col. 8: 9 and col. 9: 18-20).

Claim 37: Osenar et al. further disclose that at least one of the end plates is composed of a thermoset polymer, a thermoplastic polymer, a metal, or a metal alloy (col. 7: 54-60).

Claim 38: Osenar et al. further disclose that at least one of the end plates is composed of a filled polymer composite (col. 7: 54-60).

Claim 39: Osenar et al. further disclose that the filled polymer composite is a glass fiber reinforced thermoplastic or a graphite reinforced thermoplastic (col. 7: 54-60).

Claim 40: Osenar et al. disclose a composite membrane electrode assembly (MEA) having a molded gasket bonded to the periphery of the MEA, wherein the gasket comprises at least one reactant manifold opening extending through the thickness thereof and at least one sealant channel or port and wherein the MEA comprises an ion conductive material interposed between two gas diffusion layers (col. 5: 31-59 and col. 6: 11-17).

Claim 41: Osenar et al. further disclose that the thermoplastic material is selected from the group consisting of thermoplastic olefin elastomers, thermoplastic polyurethane, plastomer, polypropylene, polyethylene, polytetrafluoroethylene, fluorinated polypropylene and polystyrene (col. 11: 15-25).

Claim 42: Osenar et al. further disclose that the thermoset material is selected from the group consisting of epoxy resins, urethanes, silicones, fluorosilicones, and vinyl esters (col. 11: 15-25).

4. Claims 1-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Osenar et al. (WO 03/092096).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Claim 1: Osenar et al. on page 8, lines 4-29 disclose an electrochemical cassette comprising at least one electrochemical cell which comprises:

a composite membrane electrode assembly (MEA) having a molded gasket bonded to the periphery of the MEA, wherein the gasket comprises at least one reactant manifold opening extending through the thickness thereof and at least one sealant channel or port;

a fuel flow field, an oxidant flow field, and a separator plate, each component having at least one reactant manifold opening extending through the thickness thereof;

wherein the one or more composite MEA, the oxidant flow field, the fuel flow field, and the separator plate are assembled and encapsulated about the periphery thereof by a sealant; and

wherein the sealant contemporaneously seals the respective channels to selectively block those reactant manifold openings which are not intended to deliver material to a particular flow field. See also Figures 1, 3-7, 9 and 16-17, claims 1-39 and page 12, line 19-page 23, last line.

Claim 2: Osenar et al. further disclose a cassette further comprising at least one coolant flow field and wherein each membrane electrode assembly and each plate further comprise at least one coolant manifold opening wherein each coolant manifold opening extends through the thickness of the cassette (page 8, lines 13-22).

Claim 3: Osenar et al. further disclose that a separator plate and one or two flow fields are integrated into a bipolar plate (page 2, line 18-page 3, line 5).

Claim 4: Osenar et al. further disclose that each bipolar plate has zero or one oxidant flow field and has zero or one fuel flow field (claim 3).

Claim 5: Osenar et al. further disclose that each membrane electrode assembly is in contact with a fuel flow field and an oxidant flow field (page 8, lines 13-22).

Claim 6: Osenar et al. further disclose that the electrochemical cassette is a fuel cell cassette (page 8, lines 4-12).

Claim 7: Osenar et al. further disclose that each composite MEA comprises:

a MEA comprising an ion conductive layer interposed between two gas diffusion layers which comprise a catalyst (page 3, lines 6-15), and

a molded gasket bonded to the periphery of the MEA (page 9, lines 22-26 and page 10, lines 5-6).

Claim 8: Osenar et al. further disclose that the composite MEA comprises a molded gasket which interpenetrates a portion of the gas diffusion layers of the MEA (page 9, lines 22-26).

Claim 9: Osenar et al. further disclose that a separator plate and one or two flow fields are integrated into a bipolar plate and each flow field comprises a series of ridges or protrusions etched in the surface of the bipolar plate (page 2, line 18-page 3, line 15).

Claim 10: Osenar et al. further disclose that at least one bipolar plate comprises a coolant flow field (claim 7 and page 14, lines 5-16).

Claim 11: Osenar et al. further disclose that a first bipolar plate comprises a first coolant flow field and a second bipolar plate which are aligned to form a coolant passage (claim 8 and Figure 17).

Claim 12: Osenar et al. further disclose that at least one surface of at least one separator plate has one or more sealant channels page 8, lines 20-22).

Claim 13: Osenar et al. further disclose that at least a portion of the bipolar plate sealant channels is adjacent to the gasket of the membrane electrode assembly (claim 14).

Claim 14: Osenar et al. further disclose that the sealant channel is adjacent to the interface of the gasket and the membrane electrode assembly (claim 15).

Claim 15: Osenar et al. further disclose that at least one sealant channel is interposed between each membrane electrode assembly and each plate or between adjacent plates.

Claim 16: Osenar et al. further disclose that the molded gasket is composed thermoset or thermoplastic material (page 18, lines 21-25).

Claim 17: Osenar et al. further disclose that the sealant is a thermoset or a thermoplastic material (page 18, lines 21-25).

Claim 18: Osenar et al. further disclose that the thermoplastic material is selected from the group consisting of thermoplastic olefin elastomers, thermoplastic polyurethane, plastomer, polypropylene, polyethylene, polytetrafluoroethylene, fluorinated polypropylene and polystyrene (page 18, lines 21-25).

Claim 19: Osenar et al. further disclose that the thermoset material is selected from the group consisting of epoxy resins, urethanes, silicones, fluorosilicones, and vinyl esters (page 18, lines 21-25).

Claim 20: Osenar et al. further disclose that the thermoset material has a viscosity of between about 10,000 and 150,000 cP (page 17, lines 10-15).

Claim 21: Osenar et al. further disclose that the thermoset material has a viscosity of between about 10,000 and 55,000 cP (page 17, lines 10-15).

Claim 22: The limitation “wherein the bipolar plate is machined or molded out of at least one of a carbon/polymer composite, graphite or metal” has been considered, and construed as a process limitation that adds no additional structure to the bipolar plate. Osenar et al. on page 2, paragraph 3 disclose that bipolar plates serve as current collectors. One skilled in the art would know that bipolar plates would inherently have to be metallic so to be able to function as a current collector.

Claim 23: The limitation “wherein the bipolar plate is stamped from a metal sheet” has been considered, and construed as a process limitation that adds no additional structure to the bipolar plate. Osenar et al. on page 2, paragraph 3 disclose that bipolar plates serve as current

collectors. One skilled in the art would know that bipolar plates would inherently have to be metallic so to be able to function as a current collector.

Claim 24: Osenar et al. further disclose that at least a portion of the sealant channels open to the peripheral edge of one or more plates of the cassette.

Claim 25: Osenar et al. further disclose that each membrane electrode assembly and plate further comprises at least one sealant hole extending through the thickness thereof, and wherein the sealant holes are in contact with at least a portion of one or more sealant channels (Figures 4 and 5, page 8, line 20-page 9, line 7).

Claim 26: Osenar et al. further disclose that at least a portion of the sealant channels are open to the peripheral edge of one or more composite MEAs or plates of the cassette (Figure 3, page 8, line 20-page 9, line 7).

Claim 27: The limitation "wherein the sealant is introduced into the fuel cell cassette through one or more of the sealant holes or through the sealant channel openings about the periphery of the plates" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 28: The limitation "wherein the sealant is introduced by pressure assisted resin transfer or by vacuum assisted resin transfer" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 29: The limitation "wherein the sealant or resin is introduced under a pressure differential of between about +15 psi and about -15 psi" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 30: The limitation "wherein the sealant is introduced by pressure assisted resin transfer under a positive pressure of between 0 psi and about 50 psi" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 31: The limitation "wherein the sealant or resin is introduced by vacuum assisted resin transfer under a partial pressure of between about 750 Torr and about 1 mTorr" has been considered, and construed as a process limitation that adds no additional limitation to the fuel cell cassette.

Claim 32: Osenar et al. disclose a fuel cell stack comprising: (a) at least one electrochemical cassette according to any one of claims 1 through 31 (page 8, lines 4-29);

(b) at least one end plate having one or more openings which align with the reactant manifold opening(s);

wherein the end plate is assembled on the top and/or bottom of the stack of one or more electrochemical cassettes such that the openings in the end plate align with the fuel manifold openings, the oxidant openings, and optionally the coolant manifold openings. See also Figure 1 and claim 31.

Claim 33: Osenar et al. further disclose that the end plate is assembled with the electrochemical cassette(s) prior to encapsulation and prior to introduction of the sealant such that the end plate and fuel cell cassettes(s) are encapsulated and sealed in combination (page 22, lines 22-25).

Claim 34: Osenar et al. further disclose that a compression means (5 in Figure 1) is applied to the stack to provide additional compressive force to the fuel cell stack.

Claim 35: Osenar et al. further disclose that the end plate is attached to one or more electrochemical cassettes after encapsulation of the electrochemical cassette(s) (claim 34).

Claim 36: Osenar et al. further disclose that the end plate is attached by a compressive seal (claim 35).

Claim 37: Osenar et al. further disclose that at least one of the end plates is composed of a thermoset polymer, a thermoplastic polymer, a metal, or a metal alloy (claim 37).

Claim 38: Osenar et al. further disclose that at least one of the end plates is composed of a filled polymer composite (claim 38).

Claim 39: Osenar et al. further disclose that the filled polymer composite is a glass fiber reinforced thermoplastic or a graphite reinforced thermoplastic (claim 39).

Claim 40: Osenar et al. in Figure 9 disclose a composite membrane electrode assembly (MEA) having a molded gasket bonded to the periphery of the MEA, wherein the gasket comprises at least one reactant manifold opening extending through the thickness thereof and at least one sealant channel or port and wherein the MEA comprises an ion conductive material interposed between two gas diffusion layers.

Claim 41: Osenar et al. further disclose that the thermoplastic material is selected from the group consisting of thermoplastic olefin elastomers, thermoplastic polyurethane, plastomer, polypropylene, polyethylene, polytetrafluoroethylene, fluorinated polypropylene and polystyrene (page 18, lines 21-25).

Claim 42: Osenar et al. further disclose that the thermoset material is selected from the group consisting of epoxy resins, urethanes, silicones, fluorosilicones, and vinyl esters (page 18, lines 21-25).

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS H. PARSONS whose telephone number is (571)272-1290. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

Thomas H Parsons
Examiner
Art Unit 1795
